

# Prospects

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The Journal of the Canada/Newfoundland  
Cooperation Agreement on Human Resource Development



Premiere  
Issue

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# Prospects

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# Building Excellence in People

Our human resource reaches its full potential when presented with technology and the opportunity to grow. It is then that form has function, imagination flourishes and artists from all fields create.

For Newfoundland and Labrador, the shape of the future will be determined by the extent to which the people of our province make the most of the social and economic changes that confront them. To become better equipped to meet those challenges, Newfoundlanders and Labradorians must be provided with the opportunities to improve their skills, increase their knowledge and take greater responsibility in the workplace. In short, we need to "build excellence in people".

This is the premiere issue of *Prospects*, a journal specifically designed to address issues in human resource development. This publication is a response to a need to inform individuals involved in education, business, labour and government of innovative initiatives taking place in the field of human resource development within this province.

*Prospects* has several key objectives. The first is to draw attention to the importance of and the issues surrounding human resource development. Hopefully, the journal will be a significant factor in raising the awareness and appreciation of this emerging issue. Secondly, the journal will describe innovative and creative activities taking place in the human resource development field, thus

enabling those involved to stay current, to learn from others, to develop contacts and, hopefully, to spawn new activities. Thirdly, the journal will provide a forum for meaningful discourse on practical and theoretical concerns relevant to human resource development. In that sense, it is very much a practitioner's journal. Finally, the journal will help build an understanding of the nature and scope of human resource development. Clearly, the classroom teacher, college instructor, private consultant, software developer, university professor and personnel officer are all working for the same goal, to build excellence in people.

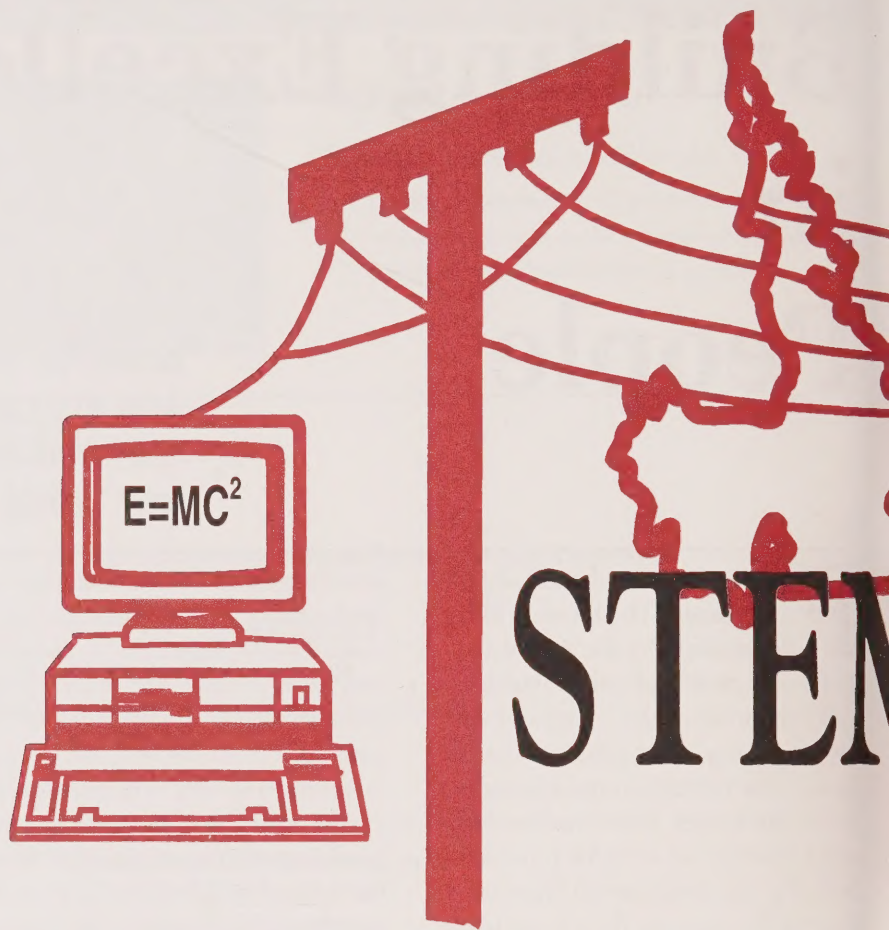
The journal is supported by the Canada/Newfoundland Cooperation Agreement on Human Resource Development (HRD). The Agreement recognizes the importance of the contributions that well-educated, creative and energetic people are making to the province and the potential for a journal which chronicles their contributions.

The projects profiled in the first issue have been drawn from the HRD Agreement. Moreover, the articles reflect a common theme - the importance of a positive attitude in effecting change. As the reader will become quickly aware, the individuals responsible for the innovative programs

highlighted here are progressive, enthusiastic and energetic. Indeed, one of the unique features of this program is the involvement of individuals who implement new ideas because they have identified a specific need and are attempting to address that need. They have a genuine interest in promoting excellence.

Future issues of *Prospects* will deal with many aspects of human resource development. They will address themes such as lifelong learning, professional development, management techniques, and the human resource development industry. The intention of *Prospects* is to highlight the exciting changes that are taking place in our schools, colleges and workplaces which are helping to create a new legacy - a society of better educated, highly skilled and self-motivated individuals. We believe that our human resource is by far our most valuable and holds the greatest potential.

Trudi Johnson  
Albert Johnson  
(editors)



providing an  
information highway  
for the province's  
educators

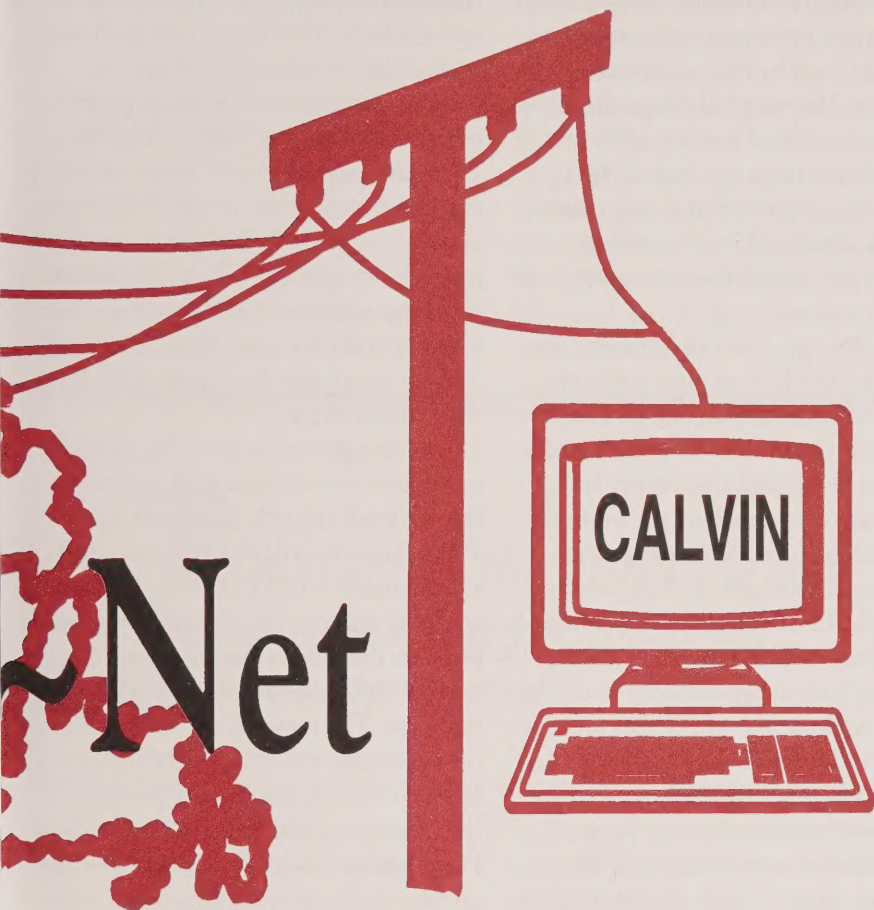
**I**n the spring of 1991, the Atlantic Canada Opportunities Agency (ACOA) proposed to the provincial government the establishment of a state-of-the-art computer network across the province for educators who teach science, technology and mathematics. The Agency feels this is essential for the higher level of education which is needed to ensure the long-term success of commercial projects and to improve the provincial economy and employment opportunities.

A feasibility study of the proposed network showed that professional isolation and inexperience in many areas of technology are among the most serious impediments faced by educators, especially in science, technology education and mathematics. The consultants made an extensive study of educational networks throughout

North America and confirmed the value of having a teachers' network in this province.

Memorial University of Newfoundland was asked by ACOA to develop a full network and funding proposal. The project was run under the auspices of Dr. Jaap Tuinman, Vice-President, Academic, at Memorial University. Tuinman requested that Harvey Weir of Memorial University's physics department develop the proposal and carry out extensive consultations with various groups within the education system, both levels of government and the private sector.

The province-wide consultations and preparation of the proposal were activities that made up the first stage of this extensive five stage project. The first stage was completed in July, 1993. In the early period of stage two



Wilf Bussey and Leo Harlick assembled the hardware and software that make up the technical aspects of the network.

Harlick continues to administer the technical operation of the network as the systems manager. Also in this second stage the project staff is developing programs, piloting the system in over 200 schools, and carrying out demonstrations and training. Frank Shapleigh and his assistant, Dale Fraser, are conducting the training sessions.

Initially STEM~Net staff members planned to hold in-service sessions for school board office personnel and at least one individual in each of the schools that received hardware through the project during this stage. But the demand for training sessions grew beyond original expectations. Several school boards purchased their

own equipment, placed it in their schools, and encouraged teachers to take advantage of the new network. Many teachers who have their own computers have also requested access to STEM~Net. Because of these factors, the number of user accounts issued to date has far surpassed projected figures. The proposal forecasted that 2000 accounts would have been issued by the end of this fiscal year and that 40 per cent of these accounts would belong to active users who would be on-line approximately three hours per month. In reality, the STEM~Net staff has issued approximately 4000 accounts. Two thousand of these are classified as active users who avail of the network at least five hours per month.

Harvey Weir, the director of STEM~Net, is very excited about the results of the project to date.

"Feedback from teachers is extremely positive," says Weir. "They have been using the network extensively." Figures indicate that on a per capita basis Newfoundland and Labrador teachers presently using STEM~Net avail of network services, such as the Schoolnet at Carleton University in Ottawa, more than any other group of educators in Canada.

STEM~Net now reaches 75 per cent of the schools in the province. Forty percent of the schools are connected directly to the system via hardware that is installed in the schools. The other 35 per cent of schools have indirect access through teachers who have computers and modems at home. It is estimated that 80 per cent of all the users in the system have access to the network from their homes.

The services available to STEM~Net users will continue to grow as the network develops. At present teachers can take advantage of electronic mail, general information bulletin boards and newsgroups, access a wide range of on-line general library and database resources, take some courses through distance education, and access the Internet, a worldwide network made up of college and university educators, researchers and libraries. The staff is hoping to add to the list of services in the fall of 1994 with on-line conferencing, provided suitable software can be found.

The STEM~Net staff is also very encouraged by the methods teachers have employed to put these new services to use. Lester Simmons, the computer studies coordinator with the Roman Catholic School Board for Labrador, Labrador West area, is enthusiastic about the potential of the system. "The network is certainly improving our ability to communicate and discuss problems that we are experiencing in our field." Simmons cited a problem he was experiencing with a piece of software. He described



*Harvey Weir - STEM~Net Director*

his problem in a message that he placed in a newsgroup and was pleasantly surprised by the volume of responses. He received advice from users on the island portion of the province and from teachers as far away as the United States. He claims that in Labrador West five to ten teachers per school have accounts and are active users.

On the east coast of Labrador, in Nain, two teachers are using the system for a different purpose. In cooperation with the STEM~Net staff and a professor at McGill University in Montreal, these teachers are taking a post-graduate certificate program in educational technology. The program is not offered at Memorial University at this time and the teachers would not have had an opportunity to do the courses without the aid of this form of distance education. The staff and the policy committee that administer the project are excited to note that in many different ways educators are using the new network to end the professional isolation that teachers in remote areas of the province have experienced for far too long.

The program development and training initiated in stage two will continue during the third stage of the project. When the network is fully operational throughout the province 8,000 full-time educators in nearly 500 schools will have access. In addition, more than 500 public-college educators on the 26 sites of the four public-colleges outside the St. John's area, and hundreds of resource people will be able to avail of STEM~Net. More than 40 per cent of public school educators and most of the college educators have an involvement with science, technology education and mathematics. It is anticipated that nearly 6,000 educators and resource people will use STEM~Net within the next four years.

This project is a leader in this

type of technology in Canada and the rest of North America. Plans are to ensure that every school in the province will have at least one computer with access to STEM~Net by 1995 and that there will be a computer with access to the network in every classroom by 1998. Both of these projections are one year ahead of similar programs underway in the rest of Canada and two years ahead of initiatives being pursued in many parts of the United States.

Although one goal of the project is to place a computer with access to the network in each classroom by 1998, students will not be given individual access to STEM~Net. Instead, students will use the network in group projects that are research-oriented and carefully monitored by their teachers. The focus of the network is on educators, not on students. From an economic development perspective, there are two reasons for this. First, student learning depends on the quality of the in-school learning environment. Teachers and instructors are the single most important factor in providing excellence in education. Teachers who have easy access to vast amounts of new and relevant information and have actively established lines of communication with other educators in their area can greatly enrich the learning experience for their students. Secondly, teachers need opportunities to prepare for leadership roles in an information-technology future that includes open-network access.

The future of STEM~Net is very promising. Work on posting the curriculum guides for courses taught in the province's schools will begin this summer and most will be available for downloading in WordPerfect and text formats within two years. Plans also include that government policy papers on education will be made available to teachers on-line to enable them to

offer their input on important educational issues.

The staff of the project is continually looking for ways to improve the system and make the flow of information more efficient. However, when the STEM~Net project enters its last two stages, the transition stage and the continuance stage, some difficult issues will have to be addressed. The telecommunications cost for the net-

opment goals of the province's teachers, program coordinators and consultants in science, technology education and mathematics. They are eager that STEM~Net operate with a philosophy of quality assurance and cost-effectiveness, provide the backbone of an emerging open-learning network throughout Newfoundland and Labrador, and help to end the professional isolation that many educators

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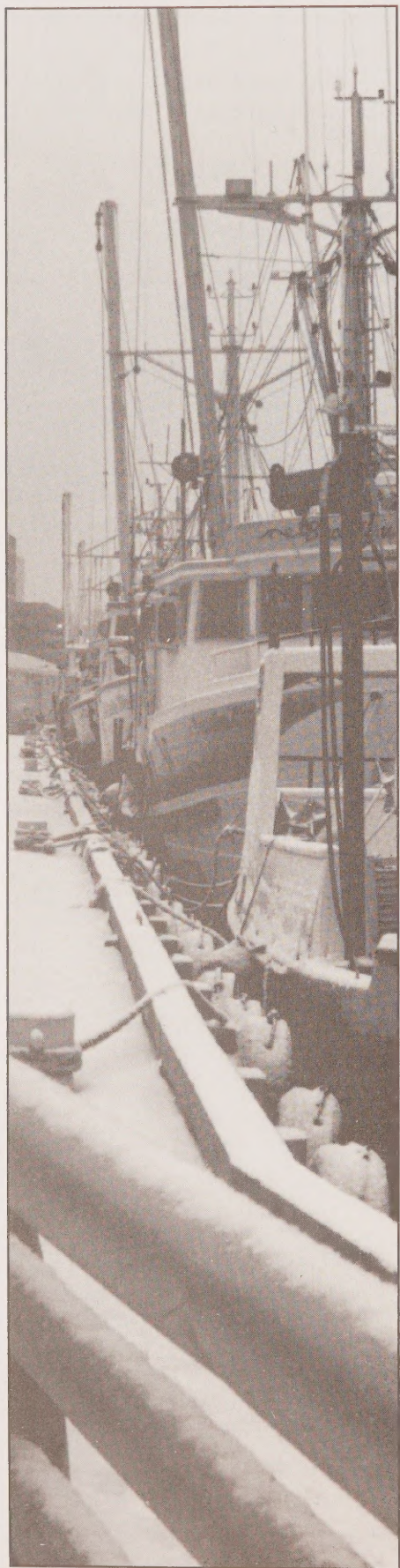
**T**he staff of the project is continually looking for ways to improve the system.

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work is currently excessive as far more users are taking advantage of the system at this stage in its development than was predicted. Hopefully, this problem will be solved with software that will allow teachers to download many of the services they use and then work with them off-line. The project was initiated with funding from several agencies and institutions but if the network is to survive, other sources of revenue must be found. Harvey Weir is optimistic about finding these financial resources. He hopes that the school boards, the Department of Education, Memorial University, the colleges, the Newfoundland and Labrador Teachers' Association and Newfoundland Telephone will be anxious to help provide the financing required to maintain the system annually.

The stakeholders in the STEM~Net project set out to establish an educators' network that would be driven by the curriculum-based, instructional and professional devel-

in our province experience. In many ways STEM~Net is meeting these goals. The response to the project has been overwhelmingly positive at this stage in its development as more and more educators make use of the resources available to them. It appears from this early stage that STEM~Net will live up to expectations and will provide the province with a significant contribution to education. **Ω**



# Fishery Observers' Accreditation

business, labour and government looking to the future beyond the moratorium

**T**he Fishery Observers' accreditation program is a special initiative which brings together government, business and labour in a common goal—the recognition of the fishery observer as a trained professional with a specifically designed set of skills. One of the program's key objectives is to ensure that fishery observers have the training to meet the changing needs of the workplace, a directive of particular relevance in light of the current fishery moratorium. From the workers' perspective, the widespread acceptance of occupational standards will provide greater job portability both provincially and nationally.

In the 1970s, the extension of

Canadian jurisdiction over territorial waters (the 200-mile limit) necessitated the hiring of fishery observers through the federal government's Department of Fisheries and Oceans. The job included collecting biological data on fish species and monitoring foreign and domestic vessels to ensure proper compliance with Canadian fishing regulations. Nevertheless, over the years a substantive degree of variance within the occupation became apparent in terms of reporting systems, data collection, job performance variables and vessel activity. At the same time, job descriptions and training programs varied throughout the country, leaving fishery observers with a low degree of job portability.

Today, the Department of Fisheries and Oceans retains its autonomy over fishery observers through certification and training programs. However, the task of supplying fishery observers is contracted out to the private sector. In Newfoundland and Labrador, Beothuck Data Systems, through its corporate division, Seawatch, is the sole employer of fishery observers. Two years ago, Seawatch and Teamsters Local 855 identified the need for occupational accreditation of the fishery observer group. Together, they started a project to design and implement an accreditation program.

The steering committee set up to coordinate the accreditation process is chaired by Deborah Thiel of Nexus Consultants Inc. The committee consists of representatives of Teamsters Local 855, Seawatch, Fishery Observers, the Marine Institute, the Department of Fisheries and Oceans, the Department of Fisheries, the Department of Education, and Employment and Immigration Canada. Formulating an industrial profile of the fishery observer and completing an occupational analysis are among its initial challenges. The Marine Institute in St. John's is designated as the post-secondary institution responsible for curriculum development and the training of those entering the occupation as well as the retraining of fishery observers already employed. Maintaining and renewing the curriculum will be an on-going process as occupational standards evolve.

Consultant Deborah Thiel notes that this type of training marks the first such accreditation program in the world. Government, business and labour see this as a progressive step, one that looks beyond the moratorium to the potential of the future. "We are putting ourselves in the driver's seat, exactly where we should be," says

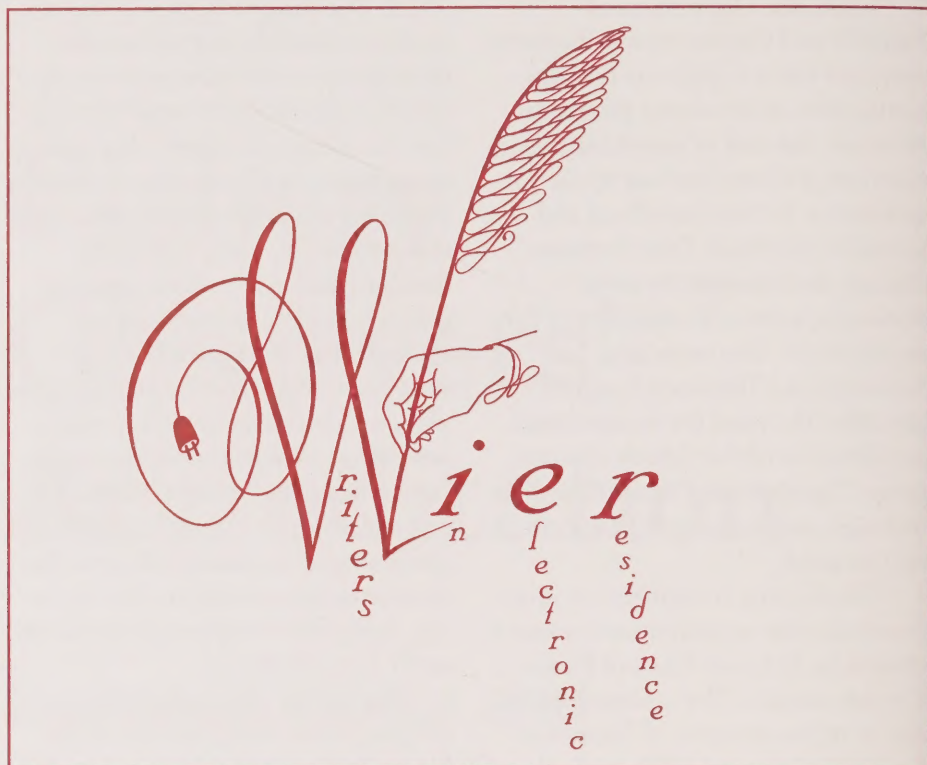
Thiel. The program hopes to increase productivity and competitiveness through the establishment of occupational standards and formal training. For the individual fishery observer, accreditation will increase job security by raising the professional standards of the occupation. Long-term goals involve gaining formal recognition through provincial, national and international certification. Skills acquired through the training program will provide fishery observers with a wide range of abilities transferable to similar occupations. Specifically, formal training will include further skill development in marine sciences, the environment, navigation, law of the sea, applicable computer programs and other related subjects.

The model of accreditation designed here, being the first of its kind, will be marketed in regions of the world where fishery observers are required. Hopefully, prospective fishery observers will be attracted to the formal training program offered by the Marine Institute in Newfoundland. A bi-product of the accreditation process, then, will be the expansion of the province's post-secondary education program for the purpose of training the relatively new occupation of fishery observer. **Ω**

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teachers on the  
Burin Peninsula have  
a new tool to  
motivate their  
students to write

"I saw that it was transforming attitudes towards writing," says Frank Kennedy, the Language Arts Coordinator for the Roman Catholic School Board for the Burin Peninsula, about his first impression of the research that became the catalyst behind introducing Writers In Electronic Residence (WIER) to the school district. Kennedy first encountered the concept while he was attending York University in Toronto. A colleague and the creator of WIER, Trevor Owen, was researching a program that links, via email, famous Canadian writers with students involved in creative writing across the country. Kennedy read interviews that were held with teachers and students involved in the program. Encouraged by what he had read, he became eager to start the project in his own school district.

Soon after Kennedy returned to his duties as Language Arts Coordinator he sold the idea to his school board. The equipment necessary for each school to take part in

new computer networking systems had already been purchased. After dealing with some technical difficulties, all the telephone lines, modems and computers were soon in place and working. The next step was to introduce the teachers to the program.

Teachers from Marystown, Burin, Rushoon, Lamaline, St. Lawrence and Lawn took part in a two-day inservice on the project. Trevor Owen was brought in as the facilitator and two teachers from each participating school attended the workshop. Many aspects of the project were covered during the two days. Topics included the purposes and practices of WIER, training in the technical aspects of networking and trouble-shooting the hardware and software, and the integration of WIER in a writing program.

The WIER project is administered by Trevor Owen out of York University. Students and authors are grouped into what he calls "electronic literary salons" (MACLEAN'S/ December 27, 1993). Schools from geographically diverse areas of the

country communicate through email with each other and with the authors assigned to their conference and salon. Schools are placed into a conference according to the level of students who attend. Ten authors are currently acting as professional mentors and guides for 1994. Emily Hearn and Ken Roberts respond to elementary school students on the *Write With You* conference, Ken Roberts and Kevin Major communicate with the intermediate students on the *Word for Word* conference, and Susan Musgrave, Trevor Ferguson, Marilyn Bowering, Daniel David Moses, Patrick Lane, David McFadden and Dave Margoshes correspond with high school students on the *Wired Writers* conference.

Each of the schools in the Roman Catholic School Board for the Burin Peninsula participating in the project is placed in a conference according to grade level, and then in a salon with as many as four other schools. St. Joseph's Academy in Lamaline is a K to 12 school with a population of 367 students. The program is used at the primary and elementary level in the elementary conference, *Write With You*. They are in salon four with St. Stephen's in Stephenville; Churchill Elementary in North York, Ontario; Northumberland Board of Education, Cobourg, Ontario; and Minitoras, Manitoba, a town of 600 inhabitants near Lake Winnipeg.

Having their work downloaded into the system and presented to students in other parts of the country is a great thrill for the students. Missy Cousins is a Grade 3 student at St. Joseph's. She shared her story with students at Churchill Elementary in North York, Toronto.

#### *How I Got Lost*

*Early one sunny morning while Missy was playing outside, a near-sighted*

*pelican swooped down and carried her off. The pelican headed for a wooded area and dropped Missy in a bunch of trees. A family of bears came along and took her to their home in a cave. They cared for her, fed her and kept her warm. She learned to swim like a bear and hunt for food. They grew to love her like their own and because of her long blond hair, they gave her the name, Goldilocks. One day while she was trying to catch a fish in a brook, she slipped and fell in. The moving water carried her downstream. Just below her, a man and a woman were berrypicking on a marsh. The lady saw the blond haired girl in the water. She ran and picked her up and wrapped her in a blanket. As she was being dried off, Missy peeped at the lady from under the blankets. She wasn't afraid and she felt a*

Dear Missy,

*Does this story relate to a story told already? Did Missy's parents feel sad when Missy flew away with the pelican? We really enjoyed reading your story. You also have a good imagination.*

*from Katrina (Gr.4), Sharon (Gr.4) and Lauren (Gr.3)*

Ken Roberts is the author who commented on the stories in salon four during the month of March.

Missy, this is Ken. I love the opening sentence. It is wonderful. Aha! I notice that you do have the parents laugh and cry when Missy returns to them. I liked your story very much. You write

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*Students enjoy sharing their work with children and well-known authors in other parts of the country.*

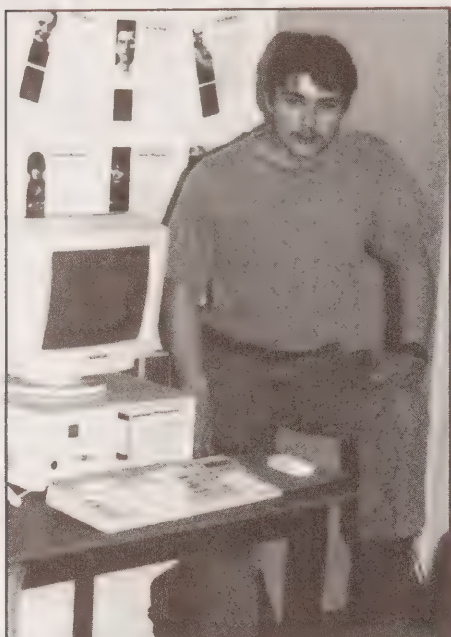
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*kind of closeness. The lady kept looking at her and soon realized that the little girl in her arms was her little Missy. She laughed and cried and danced so happy to have her back. As Missy grew older anytime she saw a bear in a zoo or on TV she felt such love and also sadness because she would never forget her other family.*

Katrina, Sharon and Lauren are the students who responded to Missy's story.

*extremely well. It is important to think like each character, trying to imagine how each one would react to a certain situation.*

Eric Ayers and Catherine Benteau, the teachers who direct the program at St. Joseph's, are excited about the results that have been achieved so far. Benteau spends a great deal of her own time preparing the students' work to be downloaded into the system. "Our students have a wider audience than just their lang-



Jay Martin - Student Assistant

uage teacher and their fellow students." she says. "Students in other schools and the writers pick up on ideas and styles that their classroom teacher might not see and will make a comment about them." Ayers is very pleased that the program seems to be a real conduit for general knowledge about other parts of the country. He tells about Jody Stacey, a grade two student at the school. Jody had written a story called *Unwelcomed Visitor*, about a shrew that had invaded the family home. The beast was eventually subdued by Tiger the cat. Ghana Khoraych, a grade 5 student at Churchill Elementary, in North York, responded:

Dear Jody,

*I liked your story. It was great. I also liked the title you gave it. I've never heard of a shrew before. What is it? Did you make it up or is it just something I've never heard before? You're lucky you had a cat named Tiger.*

Your friend, Ghana, Grade 5

In Lawn's Holy Name of Mary all grade school, Kathy Stacey and Charlene Walsh direct the program. Stacey is the vice-principal and a language arts teacher. Students in grades four, five and six are involved in the program. Stacey talks enthusiastically about many positive results they have achieved since they started the project and of its great potential. "Our students are often asked what it's like to live by the sea and what they like best about living where they are. We also get information from the other schools about what life is like where they live. What's most reassuring is when you see students recognizing how much they really have in common with children in other parts of the country." Stacey would like very much to involve her high school stu-

dents in the project but because of financial restrictions placed on the program at York University each school is only permitted to participate at one conference level. Jay Martin, a level two student at Holy Name of Mary, has played a key role in the project at his school since its inception. Jay has quite a facility with computer hardware and software and has a special interest in writing. He has been active in preparing the work of the younger students for downloading and has been printing the comments that have come back from the authors and the other schools in their salon.

Frank Kennedy believes that the program has been a great success. "Teachers and students alike are excited about writing," he says. The students have significantly broadened their audience for their writing and teachers have found a new tool that motivates their students to write. Kennedy is eager to have the project spread to the other schools in his district so all the students under the board's jurisdiction could benefit from this unique and useful application of computer networking.  $\Omega$

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# Computer Assisted Teacher Talk



putting new technology to work in professional development

Teachers in the Exploits Valley Integrated School Board are utilizing a new approach to professional development. Twenty-two teachers from primary and elementary schools in the district are actively involved in Computer Assisted Teacher Talk (C.A.T.T.). The participants are using laptop computers and modems to communicate, via email on STEM~Net, with each other and with teachers in the rest of province and the world. These electronic discussions include topics such as teaching strategies for various subject areas, articles from professional journals, techniques in classroom management, and other professional development issues. The response of the participants to the program has been overwhelmingly positive and other teachers in the district are anxious to participate in a proposed second phase of the program for the 1994-95 school year.

The board has already confirmed funding for the second phase of the

program which will bring another twenty-two teachers into C.A.T.T. The teachers who are involved in the project this year will act as facilitators for the teachers who take part in the second phase. The laptops used this year will be passed on to the new group and the teachers from the 1993-94 program will be given desktop computers for their classrooms so they can continue using their newly-acquired skills and share them with their students.

The program was sparked by concerns that student performance in the Exploits Valley school district has been steadily declining. These conclusions were based on classroom observations, ongoing formative evaluation, national indicators like the C.T.B.S. scores, provincial criterion-referenced tests, and public examinations. Educators in the area believe that if this downward spiral is to be reversed, the professional development of teachers in the district must become a priority. Traditional meth-

ods, such as the one day workshop, are not adequate. They believe that professional development should be sustained, ongoing and intensive, and include the most current technologies. C.A.T.T. is the result of one of their efforts to address this concern.

Deborah Armstrong, the Special Services Coordinator; Ruth Davis, the Primary Coordinator; and Gary Young, the French Coordinator, conceived the idea and developed the project. Forty-nine primary and elementary school teachers applied to the program and twenty-two were accepted from eleven different schools. From the beginning the facilitators stipulated that a strong commitment from the teachers would be required. Very few of the teachers had previous experience with computer technology but received hands-on computer training as the program progressed.

The initial training session in September took the form of a five day workshop. Emphasis was placed on

group dynamics and cooperative learning throughout the in-service. The basic computer skills covered during these sessions included file management, keyboarding, and communications. The teachers were also given an opportunity to develop a proficiency with an integrated software package, Clarisworks. It is stressed, however, that the purpose of the project was not only to teach computer skills but to facilitate a routine of ongoing professional development through the use of computer technology.



*Joan Clarke and Bill Melvin work on a software tutorial.*

The participants also attend weekly sessions at the board office. They meet each Tuesday at 5:00 p.m., share a meal, and at 5:30 p.m. begin the session. Teachers have made a commitment to attend and Gary Young claims that it is very unusual for anyone in the group to miss a session. The three coordinators plan the meetings carefully. An agenda is created, activities are planned, and journal articles are selected for the group to read and discuss. The first order of business is to discuss any problems or questions members of the group may have with regards to work from the

previous meeting. The teachers are then given articles, software tutorials or communications assignments that help them work with various aspects of technology. For homework they may be asked to send email to their partners, access the Internet to find information specific to their curriculum area or evaluate a piece of software. The exercises are designed to assist them to work with the technology that will be used as professional development tools.

The main purpose of the project is to encourage teachers to focus on a sustained approach to professional development. To facilitate this process, articles are chosen for reading and group discussion. At the April 12<sup>th</sup> meeting journal articles on the theme *Teaching for Understanding* were discussed. The participants were divided into five groups. Each group evaluated one article on this theme and reported to the larger group. Ruth Davis noted that the group has become very discerning with journal articles. "Our approach to the articles has changed greatly since the first meeting. The group members are very straightforward in their criticism. They will certainly tell you what they think."

The activities' section of the meetings generally involves some aspect of technology and how it can be applied to education. These activities can include an introduction to a piece of software, a cooperative learning approach to a program tutorial, or an introduction to a new area of the Internet via STEM~Net. Members of the group often request activities in areas of particular interest to them. Together, either in the meetings or during the rest of the week via email, the participants work through any difficulties they may encounter with the technology.

A question period follows the activities' section of the meeting. Participants ask questions about the

technology they are using, make suggestions for the agenda of future meetings, or discuss issues pertaining to professional development. The meeting concludes with a check of members' progress. The participants express their views about their own progress at the meeting and offer some self-evaluation in terms of their improvement and increased level of understanding of technology.

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*"This project is about professional development. Computers are just a tool we use to help us get where we want to go."*

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The school board personnel who facilitate the program use several criteria to evaluate it. They have observed a marked difference in attitudes among the participants with regards to professional literature and the potential of the computer as a tool for professional development. The most significant indicator, however, is the time these teachers spend on-line. They are using email extensively to discuss curriculum issues and journal articles, share teaching strategies and classroom materials, or discuss issues specific to the project. Another indicator of the project's success is the number of teachers in the district who want to start programs of their own. Stan Cole, the superintendent of the Exploits Valley Integrated School

Board, is dealing with requests from several schools. "A number of schools in our district want to start their own program. Some have assured 100 per cent participation from the staff and have indicated that they are more than willing to put their own time into the project."

The main benefit of the program is undoubtedly the attitudes it has generated in the participants. In a mid-project evaluation one group member wrote, "C.A.T.T. has renewed my faith in the teaching profession. It has been inspiring to see busy people work so hard and so faithfully." Another member of the group commented, "The greatest benefit coming from this project is the realization that long after it has ended, this network of educators will still be talking, assisted by the computer." Deborah Armstrong attributes these positive results to a straightforward approach. "This is not a computer course where we teach technology for technology's sake. This project is about professional development. Computers are just a tool we use to help us get where we want to go." Apple Computers has taken an interest in the program and will be highlighting the project with a Hypercard presentation and Quicktime video on a CD ROM called, *Apple Innovators in Education*, available in May. Ω

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G.C. ROWE

## an innovative computer project at the intermediate level

Sound planning, cooperation and enthusiastic leadership are all ingredients in the success educators enjoy with the computer project at G.C. Rowe Junior High School. Because of the diligent efforts of the school's Computers in Education Committee and Academy Canada, a privately owned post-secondary institution in Corner Brook, the students at that city's largest junior high now enjoy the use of a sophisticated computer network.

Interest in the project was first generated in the fall of 1992. Gary Perry (the principal of G.C. Rowe) and many of his staff were eager to establish a program to help their students become computer literate. A number of teachers at the school were well aware of the benefits that their students could derive from exposure to the technology. Consequently, they established a planning committee and

went to work. School boards, government, and special interest groups from the private sector all confirmed that well-planned and intensive implementation of computer skills education should take place at the junior high level. There was a great deal of literature to support the staff's intentions.

However, the planning committee had to deal with a number of difficulties. The question of financing was always a concern, but no issue was more pressing than how to implement a program of computer literacy into a curriculum that already challenges the time restraints of the school year. Recent attempts to introduce computer education at the elementary and junior high levels met with limited success because computer education was seen as an add-on to the curriculum. Therefore, they felt that computer education had to be linked to some

area of the core curriculum. Their first step in solving this problem was to decide exactly what they wanted their students to learn from exposure to computers. They determined that the students should first be taught key-boarding and word-processing, and that the Language Arts program at grades seven, eight, and nine be modified to accommodate the teaching of these skills. The committee recommended that for the 1993/94 school year keyboarding and word-processing be introduced at the grade seven level and continue into the grades eight and nine programs in subsequent years. Teaching these skills to grades eight and nine students during the 1993/94 school year would be optional. A skills continuum for word-processing was then developed for grade seven.

The committee was also eager to identify other curriculum areas where learning would be enhanced through the utilization of microcomputer and related technologies. They felt that the use of tutorial software, which creatively employs graphics, sound, and simulation, would be useful in promoting the acquisition of facts, skills, and conceptual understanding in the science program. Mathematics teachers would enhance their program by using Computer Assisted Instruction (C.A.I.) software packages that are compatible with the present curriculum. Social Studies teachers would be able to take advantage of existing databases such as P.C. Globe and on-line databases through services provided by the ACOA Enterprise Network, Statscan, and the Internet. CD ROM technology would also provide electronic access to information that is presented in an attractive and motivating format. Database software would be used to compile, organize and display information and the word processing applications would be used to develop papers and reports in all

subject areas. Computer assisted instruction in many subject areas would be utilized to aid students with learning difficulties and would facilitate the individualization of instruction for all students.

Having decided what they wanted to accomplish with the technology, the next step for the committee was to determine what type of hardware and software they would want to use and how this equipment would be deployed. They decided to use IBM compatible computers with the MS-DOS environment. As recommended by the committee, a computer lab was established consisting of 28 workstations and one file server. The lab is equipped with sufficient machines to provide a one-to-one student/computer ratio for class instruction. Fifteen more workstations were placed in the learning resources centre. Novel network software is being used and the IBM Classroom LAN Administration System (ICLAS) software is being utilized to control the various levels of access to the network. WordPerfect 6.0 is the word-processing package in use.

Next, the committee approached the entire staff of the school to reach a consensus on the strategies for the implementation of the project. Then, in cooperation with Academy Canada, a program was scheduled to provide training to teachers in key-boarding and word-processing. Classes were held at Academy Canada and run by Academy Canada staff one night per week, two hours per night, over an eight week period from April 26 to June 18, 1993. Attendance was voluntary and the vast majority of the staff took advantage of the sessions. In late August, the computer committee members met with the system installers to familiarize themselves with the network and to sort out technical issues pertaining to the system. Again, teachers attended the sessions

voluntarily. These individuals acted as facilitators for other staff members at an inservice held for the entire staff in September. At this two day workshop, teachers at G.C. Rowe explored models of instruction for teaching key-boarding and word-processing, engaged in practice teaching sessions,

## Word Processing Skills Continuum

### Grade Seven

#### Starting Out

Logging On  
Entering Text  
Inserting Text  
Deleting Text  
Using Menu Bar  
Bolding Text  
Underlining Text  
Saving Text

#### Editing Text

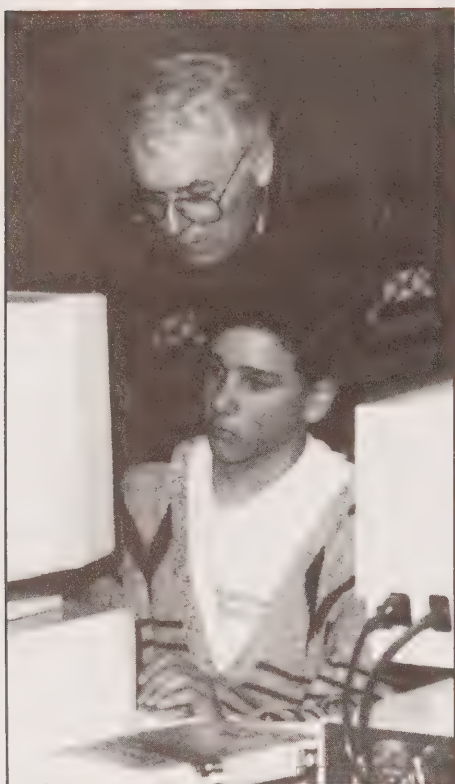
Open a saved Document  
Scroll Through a Document  
Selecting a Block of Text  
Deleting a Block of Text  
Moving a Block of Text

#### Formatting Text

Adjusting the Text Size  
Centering Text  
Tabbing  
Indenting Sentences  
Indenting Paragraphs  
Adjusting Line Spacing  
Changing Margins

#### Finishing Up

Searching for and Replacing Words  
Checking for Correct Spelling  
Printing A Document



*Ed Payne works with a student in the computer lab.*

evaluated teacher competencies with respect to implementation of microcomputers across all curriculum areas, and developed a plan for teacher training in microcomputers through the fall and winter of 1993/94.

Students have been using the computer lab at G.C. Rowe since September of this school year and the teachers and administration of the school are very pleased with the project. Ed Payne, the system administrator, has spent a great deal of his own time installing and working with the new system. Payne has been teaching for more than 20 years and describes his work in the computer lab as a new and very enjoyable challenge. As well as technical expertise, Payne also provides professional support and team teaches in the lab with other staff members. Les Butler, the learning resource facilitator at G.C. Rowe, says that the grade seven students are becoming quite proficient in keyboarding and word-processing. He also finds that students have a greater tendency and desire to share their work and are proud of what they are accomplishing. He is also looking forward to the completion of the learning resources centre automation project. This will enable students to access the library card catalog through the network and also give them access to information on networked CD ROM software.

John Oldford, a grade seven language arts teacher at the school, is encouraged to find that students are beginning to do all of their writing on the computers. His students no longer produce a rough draft with pen and paper. They go straight to the keyboard with their research notes and write. He notes that this process encourages his students to be more thorough with the editing process.

The success that the staff of G.C. Rowe Junior High School has enjoyed with this computer project is the

result of much planning, cooperation and enlightened leadership. Gary Perry is very positive about the program and says that it works because the staff members of his school want to make it a success. He is greatly appreciative of the efforts of Ed Payne and stresses that if projects like this are going to be successful, at least one teacher on staff must have the expertise and the desire to spend the time to learn the system and to act as the system administrator. Perry is also very pleased with the capacity building that has occurred. As the staff members become better acquainted with the technology, they are better able to apply it to their subject area.

Now that the first phase of the project is well underway, the staff of G.C. Rowe is involved in the planning process once again. The goal is to make use of the new computer facilities as much as possible in other curriculum areas. The staff intends to introduce more productivity software in the form of database and spreadsheet applications. Careful planning has been the hallmark of this project and is a key factor in allowing the educators of G.C. Rowe Junior High School to fulfill their commitment to help their students become lifelong learners.  $\Omega$

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# Modelling Engineering and Applied Sciences for Students

**W**omen in Science and Engineering Incorporated (WISE)/Femmes en Sciences et en Genie (FSG) is a national, non-profit, service organization that was founded in 1977. It was established to promote awareness in women of careers in science and engineering and to encourage them to pursue professions in these fields. The association also acts as an information centre for and about Canadian women in these fields and provides a forum for discussion on subjects of interest to its members. A recent initiative sponsored by the Newfoundland and Labrador chapter of WISE is intended to heighten the awareness of all of the province's students in the areas of engineering and other applied sciences.

Members of this organization are working to place interactive engineering models, in kit form, in the province's intermediate and senior high schools. The program is currently in the first phase of operation. Prototypes of three kits are being designed and built at the Marine Institute in St. John's. Once these prototypes are completed, five multiples of each prototype will be constructed. The five production models will be placed in schools around the province for piloting from September 1994 to January 1995. After completing an evaluation, WISE will approach various industries and orga-

nizations to provide funding for further kit multiples. To date, the prototype of the first kit is nearing completion and the designs for the second are well underway.

The first prototype is designed to provide students with an opportunity to explore aspects of electrical engineering. The Electrical Motors Race Experiment consists of the components required to construct an electric motor which drives a model car. The kit provides students with materials to build a motor in a number of configurations so they can experiment with different balances of power, performance and cost in two different applications. Abigail Steel, the project engineer, expects the kits will play slightly different roles at the intermediate and senior high levels. "In intermediate school students will build the models and try to make them work



*Thomas Silver working on the Electrical Motors Race Experiment Prototype*

efficiently. At the senior high level we want the students to work with some of the calculations and try to concentrate on a balance between performance and cost."

Thomas Silver, a student of Industrial Engineering Technology at the Marine Institute, is fabricating the prototypes as a work term project. Silver has been working with the electrical prototype since the design stages. In order to provide students with options in motor configuration, material that is not commonly used in electric motor production was employed. Silver notes, "A lot of people who deal with this type of technology told me that we wouldn't get the motor to work unless we used metal for the motor housing and the armature core." Steel and Silver persisted and did create a configuration that utilized plastic for both parts. Silver points out that the materials used in these parts create a significant difference in motor performance but students will have to use discovery learning methods to find out which design is most efficient for particular applications.

Work on the second prototype is underway. A Perpetual Motion Mechanism Experiment will let students explore concepts in mechanical engineering. There are two possibilities being considered for the third prototype, one dealing with the fundamentals of environmental and geological engineering, and the other dealing with manufacturing and industrial engineering practices. Work on the project is on schedule and Steel is planning to have kits ready to pilot in September.  $\Omega$

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# L'enseignement à distance

## pour les francophones de la Péninsule de Port au Port

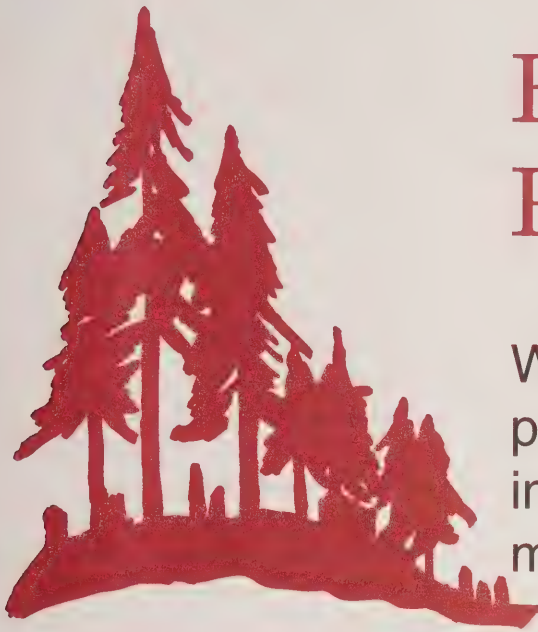
**E**n 1993, la Fédération des francophones de Terre-Neuve et du Labrador a initié un projet d'enseignement à distance afin de permettre aux francophones de la Péninsule de Port au Port d'avoir accès à de la formation en français. Les gens des communautés, surtout ceux intéressés au développement économique de leur région, ont besoin de cours et de programmes en français pour approfondir leurs compétences et connaissances dans cette langue. L'état déplorable de l'économie, les coûts élèves reliés aux cours tels que le déplacement, l'hébergement et les inscriptions sont des obstacles majeurs pour ceux qui veulent s'éduquer davantage. La technologie de l'enseignement à distance par téléconférence est un moyen de surmonter ces obstacles.

La formation à distance offerte par TETRA (Telemedicine and Educational Technology Resources Agency) permet aux étudiants d'augmenter leurs compétences et les aide à se préparer pour le marché du travail. Ils peuvent également avoir accès à des cours en entrepreneurship, en hospitalité, en développement économique et profiter du programme d'alphabetisation en français présente-

ment offert par la Fédération.

Grâce à ce projet, deux sites de téléconférence sont installés dans les communautés francophones de La Grand'Terre et de l'Anse-à-Canards. (Un était déjà installé à Cap St-Georges par la Commission scolaire Appalache.) Le but principal est de former des formateurs qui pourront éventuellement diffuser le programme ALPHA (alphabetisation en français) à la population francophone de la Péninsule à partir d'un point central. En plus, le système permet aux francophones de la région de Port au Port d'avoir accès à une variété de cours et de sessions de formation provenant de différentes institutions d'enseignement françaises à travers le pays. Le système de téléconférence est aussi disponible pour les autres groupes et organismes de la région tels que les écoles, les associations touristique et économique, les groupes de jeunes et de femmes et les conseils communautaires. **Ω**

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# Forging New Partnerships

Westviking College and two pulp and paper mills are working together to improve human resource development in the paper-making industry.

On the province's west coast, an innovative partnership has begun between Westviking College and two pulp and paper companies, Abitibi-Price and Corner Brook Pulp and Paper Limited. The project involves personnel exchange between the college and the industry. College instructors will conduct an assessment of training needs at each mill site and in turn each company will provide professional services to the College through direct instruction, program advice and consultations regarding the potential of sharing equipment.

Specifically, a curriculum consultant is assigned to each company for a six-week period. The consultant's tasks include a review of existing skill levels in the various departments and the identification of projected skill requirements. The company is then given the option of arranging training sessions to address any deficiencies. Projected skill requirements are incorporated into training programs. Professional staff from the various mill departments of both companies will work with instructors in the delivery of industry-related college programs at

the Corner Brook Campus and the Bay St. George Campus.

This exchange of expertise will benefit both parties. Personnel from Westviking College will become more familiar with the operations of a modern pulp and paper mill and refine the college's programs accordingly. At the same time, the two pulp and paper companies will benefit from an analysis of their current and projected skills requirements and will have input into the programs offered by the college.

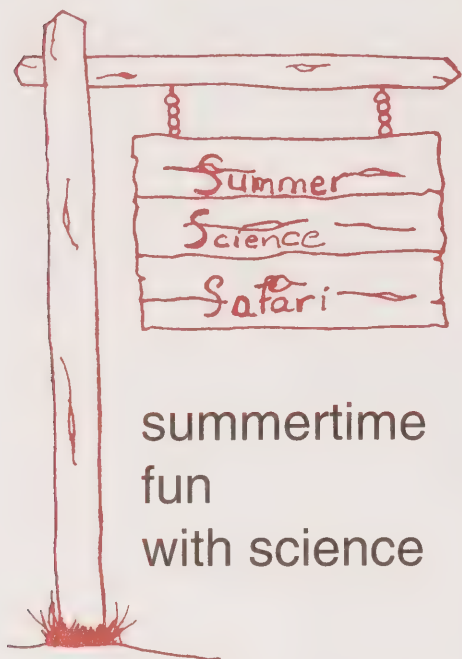
A Westviking College curriculum committee is actively working on a pulp and paper program. Representatives from the college and the two pulp and paper companies sit on the committee. Cyril Organ, the Program Development Officer at Westviking College, is encouraged by the results of this cooperative effort. "We want to establish a menu of specialized courses for the pulp and paper industry. These courses will not only be in place to train potential workers for the industry but will also serve to upgrade the skills of the individuals already employed." Organ is hopeful that this exchange program will be the model for future relationships between indus-

try and the province's colleges.

Those involved in the pulp and paper industry realize that the fierce competitiveness of the marketplace requires that companies look to a highly skilled workforce to ensure their future. This personnel exchange is one initiative which will help fulfil that goal. Westviking College in its commitment to the economic development of Newfoundland and Labrador is ensuring that the companies can avail of quality programming for their employees. At the same time the companies have access to the highly skilled individuals whom they require in order to be competitive.  $\Omega$

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## summertime fun with science

**T**he need for innovative approaches to science education has long been recognized as crucial in attracting young people to the various fields of science. For several years, the Division of Continuing Studies at Memorial University, Personal and Professional Development Unit, has been involved in a number of initiatives to promote interest in science among young people. Summer science camps in St. John's attracted nearly full enrolment and resulted in very positive learning experiences

To accommodate young people who do not live in close proximity to St. John's, the Division of Continuing Studies proposed a Traveling Summer Science Safari. The primary goal of Summer Safari '93 was to encourage increased participation of young people in rural Newfoundland in science and mathematics. Beth Power was hired to coordinate the summer science program. By early June, eight sites were selected and promotional literature was distributed to the province's schools. The sites selected were Bonavista, Harbour Grace,

Glovertown, Carmanville, Harbour Breton, Baie Verte, Port au Port and Port-aux-Basques. A total of 137 participants ranging in age from eight to eleven years registered for the program. The interactive program for the project was developed by instructors Beth Power and Renee Pearce. The program emphasized the discovery approach to science and encompassed many areas of scientific study including biology, astronomy, chemistry, environmental science, and physics. Weekly speakers provided informative and entertaining presentations and offered students the opportunity to learn more about careers in science. For example, Peter Demo, a guest speaker representing Rambler Mines in Baie Verte, took the students on a gold panning expedition. Rosie Seton, a graduate student involved in whale research, was a guest speaker at the Bonavista camp. She brought the skeleton of Humpty, a humpback whale, for the children to assemble. Friday afternoons were set aside for magic shows and plays as a chance for students to display their talents and newly-acquired skills.

The young participants became involved in a variety of science-related activities. Students cited growing

crystals, tie-dyeing shirts, experimenting with an oil-spill, going on a treasure hunt and other field trips as the most memorable events. Evaluation procedures elicited many positive comments from the students. Their responses included: "This is a lot better than sports camps" and "I didn't know science could be fun." Parents who attended the closing events were unanimous in their praise of the program.

Instructors Beth Power and Renee Pearce noted that enthusiasm for the project and a genuine interest in science are essential qualities for both instructors and contact persons. Sufficient time must be allotted for promotion and site selection to ensure maximum participation and an effective program.  $\Omega$

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*Campers pan for gold*

Problem solving is a creative process that requires original thinking. The teaching of mathematical problem solving skills, therefore, is a challenge. Indicators of student achievement in mathematics in Newfoundland and Labrador schools has shown a particular weakness in problem solving skills. Two initiatives are currently underway to address this problem. One has its roots at Grenfell College in Corner Brook and the other originates with the Department of Education.

In contrast to the formal, strategy-oriented process traditionally used, a new program emphasizes a playful, cooperative approach to learning mathematics. The project was undertaken by Dr. Georg Gunther, Department of Mathematics, Sir Wilfred Grenfell College, Dr. Jim Duffy, Department of Psychology, Sir Wilfred Grenfell College, and Lloyd Walters, Mathematics Coordinator, Western Integrated School Board. The first component consists of a study to compare current methods of teaching mathematics to the method pioneered by Dr. Georg Gunther. The innovative aspect of the Gunther method is the emphasis that it places on creating a real interest in mathematics as well as teaching mathematical skills. The new method is designed to increase the students' motivation to achieve in mathematics.

After completing extensive research into the factors which affect mathematical performance, the individuals involved concluded that an intervention program which focuses on an improved method of teaching mathematics would have a reasonable chance of improving children's mathematical skills. Their research also indicated that a gender-based advantage in mathematics favouring males continues to exist.

The initial component of this project focuses on a comparison of the

# Working with Problem Solving

## two new initiatives exploring ways to motivate students

Gunther method and the current classroom method used with grade seven students. During the summer of 1993, the curriculum materials were developed for use in a games-based approach to learning mathematical problem solving skills. Eighteen games and hundreds of mathematical problems to accompany the games were developed. The problems were scrutinized for their suitability for grade seven students.

At the beginning of this school year, the new approach was introduced to principals and teachers in the Western Integrated School Board district and received a positive response. The method was then introduced into a total of four classes in two schools, G.A. Mercer and Templeton Collegiate. The current approach to teaching problem solving

was used as a comparison in the same number of classes in the same two schools. All students completed the Fennema-Sherman Mathematics Attitudes Scales and mathematical subtests of the Canadian Test of Basic Skills before beginning the new program.

Currently, in any given class, one period per six-day cycle is devoted to teaching mathematical problem solving for the entire school year. The Gunther method of mathematics instruction is a play-based program that attempts to foster an intrinsic motivation to do mathematics. Each class session consists of a mathematical game and a brief discussion of the particular types of problems encountered in that game. Some examples are: Math Market, Math Mystery, Evolution, Fish 'n Chips, Planetary

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**T**his method is the first of its type  
to be implemented anywhere in the  
world.

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Voyage, and Speed Sprints. For each game, the students are divided into teams, with each team competing to find a novel solution to a problem. Each team consists of three students of varying levels of mathematics proficiency. Cooperation within the group is an important component that is stressed by the teacher. The entire class is challenged to compete against a fictitious group. Teams are encouraged to help each other by experimenting with different approaches.

The games are also intended to motivate students by appealing to their imagination. For example, in Math Mystery, each team is presented with a situation describing how rabbits were stolen and how the police were unsuccessful in apprehending the culprits. However, the police have collected three clues as to the robbers' hide-away. Students can buy the clues by solving crime-related mathematics problems. The students' mission is to discover the hide-away, the number of thieves involved and how many rabbits were stolen.

The use of games creates an atmosphere which encourages cooperation and group cohesion within competition. The learning of mathematical problem solving is incidental rather than intentional. The program has been in the pilot phase since September of 1993. Gunther's team is preparing to evaluate empirical data that they will collect in early May of 1994. Data to date consists of observa-

tional information. Lloyd Walters notes that the impressions of the program have been positive. "Students are more tenacious when they are working on a problem. They will work with a problem until they understand it instead of just knowing how to do it." Walters also notes that extensive research in problem-solving strategies undertaken by the team indicates that this method is the first of its type to be implemented anywhere in the world.

The program leaders sponsored a competition in Corner Brook from April 28th to April 30th. Students from 38 intermediate schools from Newfoundland and Labrador participated in a team event using the games that were created for the program. Fifty teachers, three from each school board, were also present to observe the event and then participated in a workshop designed to help them implement the approach in their own school districts. Representatives from Nova Scotia also attended the event. They are considering the new method for implementation in that province's schools.

Another initiative which intends to further address this weakness in the province's schools will provide resource materials at the primary, elementary, intermediate, and senior high levels beginning in the fall of 1994. The intention is to provide one resource kit on mathematics problem solving to every teacher in grades one

to eight. Resources will be provided on a per level basis in intermediate and senior high schools. Additional resources on cooperative problem solving, challenging mathematical problem solving for gifted students and problem solving used in mathematical competitions will also be made available.

The resources, which will be presented in printed form, have been identified as good material by consultants, coordinators and teachers from around the province. Pat Maxwell, a mathematics consultant with the Department of Education, is confident that this approach will help address the weaknesses that exist in problem solving. "We want to give teachers adequate tools to achieve the objectives set out in the curriculum."  $\Omega$

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# Encouraging Excellence in Mathematics and Science Education at Memorial University

**I**n order to encourage mathematics and science students to enter the teaching profession, the Faculty of Education at Memorial University is offering scholarships to students who are concentrating their studies in these areas. Students enrolled in either undergraduate or graduate programs are eligible. They must be registered in full-time study in the Faculty of Education. Students enrolled in a B.Ed. (Primary) or B.Ed. (Elementary) program must have successfully completed not fewer than three courses either in Mathematics or in a Science. Students enrolled in a B.Ed. (Secondary) must have successfully completed not fewer than eight courses either in Mathematics or in a Science. Graduate students who are eligible must be enrolled full-time in programs with concentrations in Mathematics or a Science. Students

must have completed successfully not fewer than sixteen university courses with an overall average of not less than 75%.

The maximum value of the scholarships will be \$2,000.00 per semester and can be held for a period of three years. Students who receive them must maintain their academic standing and must continue with a concentration in either Mathematics or a Science throughout the duration of their program.

Seven students from various programs within the Education Faculty received scholarships from the bursary program in a ceremony held on Thursday, April 7, 1994. Dr. Frank Riggs, Associate Dean of Graduate Programs in the Faculty of Education made brief remarks to the gathering. He commented that the recipients "are the best of a very good lot of applicants."  $\Omega$

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Standing L-R: Cindy Dale, Lisa Jenkins, Trudy Evoy, Lorina Spurrell  
Seated L-R: Sharon Druken, Trina Humber, Edith Lynch,

## The Cooperation Agreement on Human Resource Development

Signed in January 1993, the Human Resource Development (HRD) Agreement is built on the principle that economic development depends upon building excellence in people. This five year, \$42.9 million federal-provincial Agreement is a catalyst for long-term change in this region of the country. It strives to collaborate with school boards, community colleges, and business, labour and community organizations to initiate improvements. While the Agreement is future-oriented and looks at key variables to make Newfoundland and Labrador competitive in the national and international market, it is also sensitive to the emerging demands and the climate of the current labour market. The goals of its programs include: improving achievement and participation in science, technology, and mathematics; improving written and verbal communication skills; helping educational and training institutions respond to the need of small business, and encouraging a cooperative, working relationship between education, business and industry.

To further the economic and human resource development goals of the province, four main programs were developed. The first program, Learning and Enterprise Culture, is designed to enhance school improvements efforts, support community education and reward high achieving students. The Strategic Knowledge and Skills program promotes problem-solving skills, knowledge of science and mathematics, communication skills and entrepreneurial abilities. The program entitled Capacity Building is designed to help training institutions develop curriculum in strategic sectors and to encourage teachers to improve professional qualifications and classroom resources. The fourth program entitled Learning Together encourages industry and learning institutions to exchange personnel and build a more effective partnership between education and industry. Finally, the Research and Planning program addresses the general research and planning needs identified under the Human Resources Development Agreement.

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Canada/Newfoundland  
COOPERATION Agreement  
on  
Human Resource  
Development

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**Building  
Excellence  
in People**

# Submissions to the Editors

An important mandate of this journal is to establish a forum for discussion on issues that are of concern to individuals involved in the human resource development industry. We welcome your letters, comments, questions and submissions and will consider them carefully for publication in future issues. If there is any particular theme that you would like us to develop or aspect of the industry you would like us to explore in depth please let us know. We can be contacted by mail, telephone, facsimile or email at the following address:

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